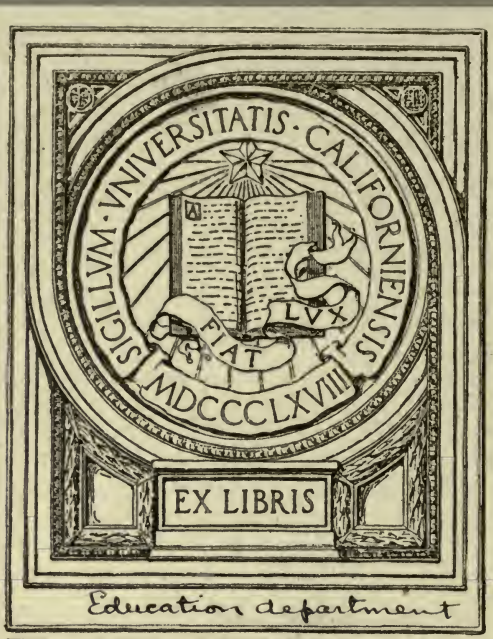
UC-NRLF
$B 67 849
LB
3415
G9
YC 57733



Education department

Main Library

No. 94 Health, Education, Recreation

MEASUREMENTS AS APPLIED TO SCHOOL HYGIENE

BY

LUTHER H. GULICK, M.D.

DIRECTOR OF THE DEPARTMENT OF CHILD HYGIENE OF THE RUSSELL SAGE FOUNDATION

REPRINTED FROM
AMERICAN PHYSICAL EDUCATION REVIEW, APRIL, 1911
BY THE
DEPARTMENT OF CHILD HYGIENE OF THE
RUSSELL SAGE FOUNDATION
400 METROPOLITAN TOWER, NEW YORK CITY

5-11-15

Educ. Library
add
LB3415
G9
Educ. dept.
Main Lib.

Some of the Pamphlets that can be Furnished by the Department of Child Hygiene of the Russell Sage Foundation

400 Metropolitan Tower, New York City

Medical Inspection

54. The Argument for Medical Inspection and Some Significant Facts. Leonard P. Ayres, Ph.D.
61. Relation of Physical Defects to School Progress. Leonard P. Ayres, Ph.D.

Retardation

77. Why 250,000 Children Quit School. Luther H. Gulick, M.D.

Hygiene and Health

4. Health of School Children. Luther H. Gulick, M.D.
29. The Playground as a Factor in School Hygiene. George E. Johnson.
48. Health, Morality and The Playground. Elmer Ellsworth Brown.
59. Statistics on Hygiene Instruction. Luther H. Gulick, M.D.
71. Open Air Schools. Leonard P. Ayres, Ph.D.

Recreation

67. Popular Recreation and Public Morality. Luther H. Gulick, M.D.
76. Exercise and Rest. Luther H. Gulick, M.D.

Festivals and Celebrations

53. May Day Celebrations. Miss Elizabeth Burchenal.
60. A Sane and Patriotic Fourth. Mrs. Isaac L. Rice.
68. Celebrating Independence Day. August H. Brunner.
70. Independence Day Celebrations. Gulick, Orr, Gardner and Hanmer.

Use of School Buildings

56. Vacation Schools. Clarence A. Perry.
83. The Community Used Schoolhouse. Clarence A. Perry.
85. Evening Recreation Centers. Clarence A. Perry.

Measurements as Applied to School Hygiene*

Luther H. Gulick, M.D.

In calling to order this Fifth Annual Congress of the American School Hygiene Association, I wish to express to the New York Academy of Medicine our appreciation of their courtesy in inviting us to meet, without expense, in this building, with its splendid record of service to the cause of medicine and to humankind, and its long list of physicians who have been and are making common cause with all those who aim not merely at the cure and prevention of disease, but even more at the upbuilding of human vitality. We are proud that one of our officers is also one of theirs—Dr. Abraham Jacobi.

I cannot let this occasion pass without drawing attention to what I believe to be a fundamental need, not only in school hygiene but in all that proudly marches under the name of science. I refer to the need for definite measurements of results already obtained, measurements without which neither medicine nor education can ever become scientific. I do not need to remind you that it was through the use of measurements that alchemy became chemistry, astrology became astronomy, physics grew out of mystery. The great need of the school hygiene course today, as well as the greatest need of education itself, is not authority nor philosophy; it is a need for definite methods of measuring the effects of present systems and practices.

I am sure that the occasion has now so far gone by that I may speak, without venturing beyond the limits of personal courtesy, of a conversation which took place between Dr. William H. Maxwell and myself at the time I became Director of Physical Training in the New York Public Schools,—a conversation which he may have forgotten. I said:

"Dr. Maxwell, let us take all of the schools in several sections of the city,—enough different sections so that the test will be a

*Opening Address as President of the American School Hygiene Association, at the Fifth Annual Congress, February 2–4, 1911.

376097

fair one,—and do away with physical training in half of these schools, leaving it in operation in the other half; all other conditions to be the same in both schools. Then we shall see what physical training really accomplishes; we shall know whether the boys and girls in the schools having physical training become taller and stronger than the boys and girls in the schools not having physical training." Dr. Maxwell answered:

"The plan is impossible. People would protest that their children were being experimented upon. The public demands absolute knowledge on the part of the instructors; experimentation would not be tolerated. You are employed to take charge of the physical training because it is believed that you know your business,—that you have accurate information as to the effect of the things you are undertaking to do."

"But," I said, "I do not know the actual results of such work as this; nobody knows. I believe my methods are right, but I want to find out definitely, by making comparative measurements."

"No, it would never do," was Dr. Maxwell's reply. "Any school administrator who worked on the basis you propose would not only be attacked by public opinion, but would be put out of any position of responsibility."

Dr. Maxwell was right. This is in general the attitude of the public today; yet progress is not possible in school hygiene or in any other educational work if it is demanded that school men shall have the accurate knowledge which they have had no opportunity to secure.

In order to make satisfactory progress along the line of school hygiene, there are many questions that need definitely to be settled. Most of these questions are fundamental not only with reference to school hygiene and education, but with reference to human progress and intellectual activity.

For example, what is the best age for a child to enter school? This is a question that could be definitely answered if we could secure adequate data on the subject. Galton and Karl Pearson have given us the tools, life itself gives us the material, for obtaining such data. We need only the opportunity. I venture the assertion that almost every person in this room has convictions upon the subject and yet that these convictions are based upon a few personal experiences in each case. Physicians tend to put the best age for entering school rather high; school men tend to

put it low. In my own case, as a father, I was influenced by my study of medicine to believe that one of the perils of the age was forcing children to go to school too early; that school routine at six years of age was dangerous to a highly organized girl; and that it was a biological crime to force such a child to sit still when all her instincts commanded her to wriggle. Therefore my child was in school very little until she was eight years old. Even at that age she had already passed the best years for acquiring languages, either by speaking or writing. She has been "over age" all during her school life. I may have done her a great wrong.

My point is this: that neither school men nor physicians nor parents are competent of judging such questions as this *ex cathedra*. Theories and convictions can never solve such problems; their only solution lies in a searching analysis of existing conditions, in measuring results in a sufficient number of cases to arrive at definite conclusions. Such investigations should be conducted in accordance with modern scientific methods.

It is concerning the most fundamental questions, moreover, that we are still at sea. We do not know the number of hours a child should study each day in order to make the most progress at each age. There is no one trying to find out, so far as I know. We do not know how many subjects a child can study to advantage at each age. We do not even know the most effective and economic size for a class at various ages. It might be, for example, that in a class of 70 children each child would get so little instruction that a number of them would be held back; and this would cost the school system more than if there had been only 50 in the class. We do not know the number of months in the year that children should attend school; yet we compel all children to go to school upon the assumption that we do know.

We do not know the proper length for each period of attention in different subjects. That is, in arithmetic a child of ten years might be able to give only ten minutes' consecutive attention without fatigue; whereas in history the same child might spend an hour to advantage. We do not know how much moisture there should be in the air of the schoolroom, nor the relation of the temperature and humidity of the atmosphere to mental fatigue and intellectual effort. We do not know fully the degree to which it is worth while to study when we are fatigued. I do

not mean that we cannot push ourselves beyond the point of fatigue; but that, considering children and adults merely as machines, there is a point beyond which it does not pay to push, since we get only a diminishing return.

I might easily spend all the time available for these introductory remarks in enumerating the underlying problems connected with the education and the health of children which are as yet only matters of theory. We have thus far no units of measurement by which we can tell whether or not we are making progress in educational methods; yet the education of our children is the largest and in many respects the most important occupation in which the civilized world is engaged. There is no more fertile field in the whole world of scientific activity than the work of bringing the young human being into satisfactory adjustment with the life he is to lead.

In the United States alone, we are spending about five hundred million dollars a year on public education; this does not include the vast sums spent by the great endowments, by privately established institutions for higher learning, or by private schools. Of nearly thirty-five millions of dollars spent for education in New York City last year, hardly a dollar was expended for the purpose of measuring the results we are getting. This was not because our Superintendent of Schools did not see the need for such measurements; he has seen the need, and has appealed without success to the Board of Estimate and Apportionment for funds which would enable him to provide the necessary equipment for securing these data. We see the significance of examining our coal to be sure that we are getting the best and the cheapest; we do not see the significance of examining the output of our school system, to be sure that we are getting the best results from our expenditure.

Can one of you here today name an educational endowment, a school of pedagogy, or any other agency that is collecting and making available the evidence on any one of these great questions? There are several great funds of ten, twenty-five, fifty millions of dollars, available for research, for giving salaries to retiring professors, for supporting education in the South,—admirable purposes, all of them,—but does there exist a single endowment of any amount whatever for the purpose of ascertaining what has been accomplished with the hundreds of millions already spent in education? An endowment similar to

that of the General Education Board, which should devote its income, not to the support of education, but to establishing modes of measuring progress, and to the application of these measurements in such a way as to render effective the great mass of educational experience already in existence, would, it is safe to say, revolutionize the status of education in a single generation and establish it upon a scientific basis.

Am I overstepping the facts when I say that there is scarcely a city in America that is satisfied with its public schools? Here in New York City an investigation has been proposed; and those who follow educational matters know that in city after city severe criticisms of the school systems are constantly coming up. Even school men themselves disagree when they come together to discuss these questions; you cannot get a group of educational people together without having a controversy upon some one of these problems. In fact, as individuals we cannot settle these matters to our own satisfaction. They can be settled only by ascertaining results—by measurements of what we are doing.

UNIVERSITY OF CALIFORNIA LIBRARY,
BERKELEY

THIS BOOK IS DUE ON THE LAST DATE
STAMPED BELOW

Books not returned on time are subject to a fine of 50c per volume after the third day overdue, increasing to $1.00 per volume after the sixth day. Books not in demand may be renewed if application is made before expiration of loan period.

JUL 25 1925

FEB 15 1929

25m-7,'25

N HOOLS

DI CHOOLS; AND

RTO RICO

ministration."—

Erie *Journal of Edu-*

catic

OLS

ool Systems

FOR RICO; CO-AUTHOR
R SCHOOLS.

his diagrams."—

Am

nd popular, criti-

cal ture."—*The Inde-*

pen

ns that has been

ma

Th **each, postpaid**

CHOOL

DEPARTMENT OF CHILD HYGIENE, RUSSELL SAGE FOUNDATION

"The book bristles with interesting information and salient quotations."—*The Chautauquan.*

"It is full of definite ideas as to programme and schedules of expense involved."—*The Psychological Clinic.*

"It is a stirring story."—*Literary Digest.*

"An able delineation of one effective means of social advance."—*Annals of American Academy of Political and Social Science.*

Price, postpaid, $1.25

CHARITIES PUBLICATION COMMITTEE
105 East 22d Street, New York City, N. Y.

YC 57733

Gaylord Bros.
Makers
Syracuse, N. Y.
PAT. JAN. 21, 1908

UNIVERSITY OF CALIFORNIA LIBRARY